DEVELOPMENT AND EVALUATION OF SUSTAINABILITY COMPETENCIES TOOLKIT

SHORT SYNOPSIS

Submitted in partial fulfillment of the requirement of the degree of

DOCTOR OF PHILOSOPHY

to

Manav Rachna University

by

Jamila Ansari
MRUEDDN012K190577

Under the supervision of

Dr Geeta R. Thakur
Professor

Department of Education and Humanities
Faculty of Education and Humanities

MANAV RACHNA
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MANAV RACHNA
UNIVERSITY
(FORMERLY MANAV RACHNA COLLEGE OF ENGINEERING
NAAC ACCREDITED 'A' GRADE INSTITUTION)
Declared as State Private University under section 2f of the UGC act, 1956

Year 2021

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DECLARATION BY THE SCHOLAR

I hereby declare that the short synopsis in the area of " DEVELOPMENT AND EVALUATION OF SUSTAINABILITY COMPETENCIES TOOLKIT " being submitted in partial fulfillment of the requirement for the degree of Doctor of Philosophy in department of Education and Humanities under Faculty of Education and Humanities of Manav Rachna University, Faridabad during the academic year 2021-2022.

It is the work that is expected to be carried out under the supervision of Dr. Geeta R. Thakur. Further, it is certified that short synopsis is within the plagiarism limit and copy of the same is attached as per University norms.

Jamila Ansari
Registration No.
MRUEDDN012K190577

Thakur 4-9-21
Supervisor
Dr. Geeta R.Thakur
Professor
Department of Education and Humanities

Dr. Geeta Thakur
Professor & Head
Faculty of Ed^n & Humanities

ABSTRACT

The Agenda21 has given a major focus on the quality education to all in its SDG4 and highlighted the key function of education to prepare future generation youth for a sustainable society. The Sustainability Competences are major focus in this respect. The present study is undertaken with the objective to prepare a toolkit which would help in embedding the Sustainability Competences in the students enrolled for graduation. The education for sustainable development requires the future youth to take informed and timely action and acquire a lifestyle that lead to the prosperity of the planet. Higher Studies programs need to be enriched with experiences leading to the acquisition of skills and competences desired for taking sustainable decisions while going for economic policies, manufacturing activities, project management, architectural design etc. The study intends to take 300 samples for survey and 80 samples for the evaluation of toolkit.

Key words: Sustainable Development Goals, Education for Sustainable Development, Sustainability Competencies, Higher Studies, Toolkit.

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1. Introduction

Sustainability is a very vast subject as it encompasses almost everything. It includes environment, socio-cultural domain, economics, technology and politics and policies. Hence, it cannot be understood from a single perspective. It is interdisciplinary in nature. It has to have a balanced approach where both global and local perspectives are to be brought together into understanding. For sustainability, a system is to be developed that sustains for long to continue. Even after the publishing of the most popular and discussed report of Our Common Future there was no legally binding convention where the world would come together and act towards making the world a more sustainable place to live. The discussions and concerns were growing around the world post publishing of this report and in 1992 the first conference was organized by United Nations at Rio-de-Jeneiro on for the issues of environment and development which was most popularly known as the first Earth Summit(Leder, 2018). This Earth Summit brought all the nations together for the first time to discuss about the future course of development and how environment can be taken care of.

Sustainable Development has been on the political and research agenda since 1980's. But despite numerous efforts our global problems are far from being solved. Even after two decades of discussions and working towards environment protection there was not any progress, it was decided to have a more focussed approach. Henceforth the Millennium Development Goals came into existence. In an attempt to deal with the issues of development in a coordinated way globally the MDGs were agreed in 2000(Kumar et al., 2016). But progress of MDGs was a mixed one.

After two decades of unsuccessful or partly successful programs it was realised that education is the core element of sustainable development and without giving proper emphasis on education it cannot be achieved. Henceforth, in year 2002, the years from 2005-2014 were declared as the World Decade for Education for Sustainable Development (UNDESD). This initiative was one among the various international policies targeting for Education for Sustainable Development. In this decade all the States were called upon by the United Nations to integrate and implement the principles and practices of sustainable development in all aspects of education and learning(Noguchi, 2017). The decade is proceeding along with a global perspective of a

world with equal opportunities of quality education to everyone. This has given a boost of activities to all government and non-government organizations to develop programmes for creating awareness for a sustainable future.

Towards the end of DESD, the adoption of Sustainable Development Goals (SDGs) on 25 Sep. 2017 by UN General Assembly and member countries(UNESCO et al., 2015), to redirect humanity towards a sustainable path gave a major focus on the role of quality education. The growing need to lead the world towards sustainable development focussed on the need to eradicate extreme poverty and hunger, battle inequality, endeavour climate change henceforth the SDGs came up as the world's new action plan for the next 15 years. The SDGs lead to the evolvement of Global Action Programme (GAP) as a follow up programme of the DESD (2005-2014) so as to speed up the sustainable development. GAP was set up with the objectives to design programmes and activities through which to disseminate knowledge, skills, values and attitudes that empower everyone towards the contribution of sustainable development and to invigorate education and learning in all programmes, agendas and activities(UNESCO, 2014). The achievement report of GAP proclaimed its continuous progress and fulfilled their four targets out of five priority action areas(UNESCO, 2019).

With the end of GAP and starting of new ESD for 2030, provision of guidance and evidence based resources are suggested at sub-national and local government for visualising the enhanced potential for the ESD in non-formal and informal education andlet them to continuously improve quality and scope of their actions.

1.1 Education For Sustainable Development

India has been long known for its rich culture. The ancient Sanskrit phrase *VasudhaivaKutumbakam* meaning "the world is one family" pithily covers the zestful approach of Indianstowards all aspects of life including economic development. This it-self shows that the Sustainable Development Goals are not new to the country's longstanding traditions and heritage instead ingrained in its culture. India has significantly contributed to the shaping of SDGs and keeping the balance maintained amidst its three pillars – economic, social and environmental. Many programs have been launched to make progress towards these goals. This shows that SDGs are reflected in

the country's own national development goals. And so India has actively supported and participated in the achieving of SDGs even before they were materialized.

There have been many declarations and programs undertaken internationally which recommend that quality education focussed in SDGs has been enrooted deeply and education is considered to play a key role (UNESCO,2005). Keeping in view the fact that education is the driving force for the 'Sustainable Development Goals' (ESDG),to highlight and strengthen the role of education as well as to bring global experience and expertise together many international conferences were organized.

The attainment of SDGs has changed the focus from financial growth to a comprehensive outlook including in itself economic, social and environmental sustainability. It is also perceived that only policy implementation and technology solutions are not enough. Education for sustainable development is not just environment education, it is a new approach in education that calls not only for a reorientation of policies, curriculum and teacher training but also reorienting learning and practice in local school, communities and workplaces. The achievement of SDGs requires behaviour changes and public awareness making education and the educational programmes the limelight. The SDG4 urges for providing comprehensive and equally available quality education and promoting of opportunities for lifelong learning. The ESD aims at changing the approach of education so that it can integrate the values of sustainable education and is an important practice for the betterment of our future through adaptation of sustainable lifestyles, knowledge of human rights, propagation of gender equality, feeling of universal society and promoting a custom of unity and fraternity. Sustainable development begins with quality education and cannot be looked upon to grow without education. Quality education is the key factor to improved lifestyles, to growing knowledge to build upon our economy and to increase the inequality reduction.

The preparation of informed citizens and enhanced skills to deal with the new century's challenges for work and life have made a constant shift of focus of educational community from equal quality education opportunities to lifelong learning and strengthened training (Anderson, 2014; Naidoo, 2015). In the 21st century new challenges are coming up and to meet these with efficiency is a challenge for education to address and to contribute to greater humanity in a rapidly changing world(UNESCO

2015, n.d.). The four learning principles of education namely learning to know, to do, to be and to live together still holds good for the achievement of quality and learning outcomes(Sleurs, 2008).

1.2 Education For Sustainable Development in Higher Education

To achieve sustainable development fundamental and significant changes are required in a way people interact with one another and manage their environment resources. The society requires a new social contract of great transformation into a suitable society. This transformation would involve significant technological improvement, new welfare concepts, multi-faceted social innovations and unprecedented level of international cooperation. It is crucial that this transformation is not imposed from the top to down instead solutions must be developed in a participating and democratic way. The process included in ESD cultivates knowledge, skills, values and attitudes, and affects the individuals. The creation of a fair and just society, economic security, ecological capacity and democracy are schools' working prospective in collaboration with the communities. The major role played by higher education institutionsin the achievement of SDG is accepted in unanimity throughout higher educators, administrators, academicians, researchers and others involved in the formulation of university policies(Boni et al., 2016; Fredriksson et al., 2020; Owens, 2017).Today increasing uncertainty or environmental issues have fostered differing opinions and debates which have deviated from the normative traditions. Today environmental problems may be considered as political issues that requires a democratic dealing. This pluralistic approach encompasses to treat equally relevant to opinions and values of all whileplanning the course of action in environmental and developmental issues. The democratic debate is the essence of ESD. No single environmental ethic is prioritized. Each alternative receives critical evaluation. A new educational approach is therefore essential to equip people to work towards a sustainable future. In recent years addressing the problems related with human development has become the core of the educational initiatives and that in turn has become the concept of ESD.

At the time when the world is continuously becoming small with globalization and interdependency the role of higher education will presumably take on a greater importance in creating a sustainable future. ESD should be characterised by the features of interdisciplinary and participatory working methods, reality based with close and frequent contact with nature and society, focus on problem solving and stimulate critical thinking. Making it possible for the future professionals to participate in the necessary transformation has become our duty towards education for sustainable development.

Higher Education Institutes generally lack an association with the current and ongoing issues and implications and alliance with the affected stakeholders. The HEI are generally understood to have direct and indirect impact on SD in the society, in the economy and the natural environment outside its organisational boundaries(Lebeau & Cochrane, 2015). Such impacts are the outcome of various activities going inside the HEIs' core elements such as education, projects, researches, campus operations, outreach programs and campus experiences(Findler et al., 2017).

The previous decade has seen a lot of consideration given to impacts of SD by various stakeholders including policy-makers, private funding agents, accreditation agencies, students and faculty(Bonaccorsi et al., 2010). A balance is created among thethree dimensions of sustainable development economic, social and environmental bySDGs and their targets while working in partnerships and calling for action by all countries. The goals are unified and inseparable. The Agenda 2030 includes five core principles also known at the five P's – People, Planet, Prosperity, Peace and Partnership to capture the growth scope for the SDGs. The importance of eradicating poverty and hunger in all its forms offering prosperity for all are underlined in these five core principles ensuring the preservation of planet and its natural resources. They emphasize a world where peace and human rights are realized for everyone and where all countries and stakeholders act in collaborating partnerships to achieve sustainable development. These core principles also define the political priorities of the ministry of economic cooperation and development. Thus HEIs' will have to take a holistic focus in all activities. Certainly the HEIs' are moving towards holistic and systematic approach when working for Education for Sustainable Development. The adoption of SDG4, in particular, is an additional agent for the implication of sustainability at HEI in an integrative way.

1.3 Competency for Education for Sustainable Development

The aim of education for sustainable development is to meet the targets of Sustainable Development Goals which has its focus on sustainable future. This could only be achieved by preparing young generations to become responsible citizens. This means to make them future ready for the betterment of society through sustainable practices and to make them accountable for themselves and their descendant(Burmeister et al., 2012; Haan, n.d.).Due to the problems based on environment and societies, the changes in educational ideas, methods and goals are required to be qualitative(Roberts & Bybee, 2014). Competency based approach is one of the approved among the approaches to teaching and learning. The expertise, skills and motives of individuals that help individuals to respond effectively and responsibly to changing circumstances are competencies(*N C E S Concepts of Competence Content*, 1999). The concept of competency has been seen as a significant achievement towards teaching for sustainable development. The CSCT model established by Sleurs which integrates four competency elements for ESD (i.e., curriculum, sustainable development, competencies and teacher training) and emphasizes individual teachers(Sleurs, 2008).

Even though higher education has started perceiving sustainability as an essential element for the designing of higher education but its scope for genuine exertion is rather small(Sundermann & Fischer, 2019). Since there are altogether different thoughts regarding how ESD could and ought to be actualized makes the viable joining of ESD convoluted. Notwithstanding the variety of existing proposition, a goal shared by the various approaches of ESD is to assist understudies with building up a comprehension of sustainability that they would then be able to use to investigate explicit issues and act likewise. Thusly one of the focal angles to go under thought are the competencies that ought to be created in the teaching- learning process and to analyse whether in fact they are being procured by the understudies(José Sá & Serpa, 2018).

A set of key abilities or competences are referred by the UNESCO in their report 'Education for Sustainable Development Goals. Learning Objectives' that are to be commenced in all degrees:

- Systems Thinking Competency
- Anticipatory Competency

- ❖ Normative Competency
- ❖ Strategic Competency
- ❖ Collaboration Competency
- ❖ Critical Thinking Competency
- ❖ Self – Awareness Competency
- ❖ Integrated Problem Solving Competency

The university education can be equipped with a dynamic tool with the commencement of the above competences into the curricula of all educational programs. Henceforth, university education would be able to equip understudies for the exhibition of their expert obligations while assuring the achievement of basic skills for decision – making by the professionals completing their university studies and carrying out their activities from the sustainability perspective.

2. REVIEW OF RELATED LITERATURE

Weng, S.S.; Liu, Y.; Dai, J. and Chuang, Y.C. (2020) employed a specific data mining procedure to establish an affiliation among ESD Competencies for teacher evaluation and existing teacher competencies. The created model was then utilised to scrutinize the teachers' core competencies for ESD and to formulate strategies for the enrichment of the same.(Weng et al., 2020)

Khandakar, A.; Chowdhary, M.E. A.; Antonio Jr. San Pedro Gonzales, A.J.S P.; Touati, F.; Emadi, N.A. and Ayari, M.A. (2020) presented a multi-course project-based learning approach that was implemented in Qatar University through two electrical engineering (EE) undergraduate courses of interdisciplinary approach. The discourse helps in the advancement of critical thinking and collaborative decision-making proficiency. These expertise are also part of the Competences enhanced through Education for Sustainable Development; and hence are useful for students for a sustainable future.(Khandakar et al., 2020)

Fredriksson, U.; Kusanagi, K.N.; Gougoulakis, P.; Matsuda, Y. and Kitamura, Y. (2020) have done a study to examine and compare the policies of Japan and Sweden for their curriculum and implementation of Education for Sustainable Development (ESD) in upper secondary schools.(Fredriksson et al., 2020)

Didham, R.J. and Ofei-Manu, P. (2020) conducted a case study research work on establishment of a monitoring and evaluation (M&E) framework to confer how collaborative research partnerships can be carried out on education for sustainable development (ESD)with the participants from seven nations of Asian region. It tries to explore the possibilities of mutual learning through organized interactions between researchers, policymakers and practitioners in the sustainability education domain. It also distinguishes the learning features accomplished through this collaborative partnership and the advantages it had on the research and knowledge co-generation and also investigates the extensive arguments with respect to the research policy interface.(Didham& Ofei-Manu, 2020)

Waltner,EM; Scharenberg,K; Horsch,C and Rieb,W. (2020) examined the knowledge and understanding of teachers at local level regarding the concept of Education for Sustainable Development and their implementation in the secondary schools of Baden-Wuerttemberg, Germany.(Waltner et al., 2020)

Caeiro,S.; Hamon,L.A.S.; Martins,R. and Aldaz,C.E.B. (2020) critically reflected and disussed the applicability of two currently in effect tools to determine and feature ESD application through two case studies. The outcome showed that there still exist some limitations and it requires specifying common objectives for the assessment tools. The tools lack to incorporate the external impacts of Higher Education Institutions on sustainability, participatory procedure and assessment of futuristic conditions of sustainability.(Caeiro& Azeiteiro, 2020)

Eizaguirre,A.; Garcia-Feijoo,M. and Laka,J.P. (2019) aimed to design comparable and compatible higher education degrees specifically for business and management studies pertaining to student-centred and Competency based learning focussing on the perceptions of multinational stakeholders'. The outcome of the study analysed through exploratory factor analysis (EFA) uncover the presence of a factor significantly identified with sustainability that incorporate competencies for instance pledge for environmental protection, being socially responsible or respect for distinctness and inter decorous, among others.(García-Feijoo et al., 2020)

Mohammadnia,Z. and Moghadam,F.D. (2019) explored the content of English textbook series through the lenses of ESD. The findings revealed that the English textbooks are equipped satisfactorily with the themes of sustainability. However it also recommends to promote discussions by the teacher in the role of a facilitator as and when such themes are highlighted.(Mohammadnia& Moghadam, 2019)

Kioupi,V. and Voulvoulis,N. (2019) developed a framework for the transformation of society to achieve Sustainability Competencies by reformulating ESD as a tool. Education stakeholders and learners work in partnership to build a universal view of sustainability, classify the required competences and build relevant apprenticeship and instructional approach through participatory approach by using SDGs as the target.(Kioupi& Voulvoulis, 2019)

Jetly,M. and Singh,N. (2019) have gone for a deep study in the context of empowerment of Indian teacher educators with the concept of sustainability. A codebook was prepared by the researchers with the help of UNESCO's TLSF program for the analysis. The findings suggested that the role of teacher educators is required to be broadened and not limited just to teacher and students. The research focusses on reorienting education system to empower teacher educators through ESD and henceforth expedite our process of transforming society with the help of targets set in Agenda 2030.(Jetly& Singh, 2019)

Lai,Y.C. and Peng,L.H. (2019) probed into the elements and context of high quality teaching through qualitative and quantitative approaches. The finding identified seven factors affecting high quality teaching efficacy. The outcome also revealed that teachers of higher design education had great interest in teaching and they employed various techniques to enrich their students with confidence and professionalism and reviewed teaching after class to make their next class more aspirant in the realisation of ESD values.(Lai & Peng, 2019)

Valderrama-Hernandez,R.; Sanchez-Carracedo,F.; Rubio,L.A. and Limon-Dominguez,D. (2019) worked for the development of a methodology to assess level of Sustainability Competences attained by students in their higher education. The outcome recommends that the subjects did not attained their learning objectives of ESD, and the competences gained by students belong to their exposure outside university or the work done by students all through the course does not get reflected through their course subjects.(Valderrama-Hernández et al., 2020)

Kar,S. and Lillian,M.J. (2018) worked on the identification of Competencies required for students of management to turn into sustainable managers and also to supervise on filling the competency gap.(KAR & LILLIAN, 2018)

Martin,D. and Keller,L. (2018) explored the outcome of a collaborative program between Austria and India and investigated whether or not the concept of participants change with respect to sustainable development goals, gender equality and decent work and economic growth when confronted with people of different perspectives.(Dür& Keller, 2018)

Findler,F.; Schonherr,N.; Lozano,R. and Stachelr,B. (2018) analysed the role of SATs in measuring the effects of HEIs on sustainable development. The outcome revealed that

HEIs generally show delinquency in measuring the effects outside of HEIs. The criteria used by SATs are basically based on alternate data available within and hence have a major focus on themes of natural environment and contribution to the local economy. For the HEIs to work up to their highest capacity amendment of current SATs and formulating of new are required.(Findler et al., 2017)

Sharma,G.D.; Uppal,R.S. and Mahendru,M. (2016) comprehensively presented the scope of technical education in India. In the present scenario they found technical education to be advanced as one of the core Competencies to ensure sustainable development in India. They observed a gap between the solution of nations problem and the education provided.(Sharma et al., 2016)

Bhagwat,N. and Abhyankar,P. (2016) examined and discussed the role of higher education system in support of sustainability concept and promotion of social and environmental sustainability for the healthy advancement of country.(Bhagwat & Pradnya Abhyankar, n.d.)

Pauw,J.B.; Gericke,N.; Olsson,D. and Berglund,T. (2015) focussed on the study of effects of ESD in the context of holistic and pluralistic approach. The result indicated that ESD influences on student learning outcomes in relation to awareness to sustainability.(Pauw et al., 2015)

Bertschy, F.; Kiinzli, C. & Lehmann, M. (2013) discuss in details two models for the development of teachers' competencies, the Curriculum , Sustainable Development, Competences, Teacher training model (CSCT model) and the Learning for future: The Competences in Education for Sustainable Development (ECE model). The CSCT model visualises teachers in three roles as of their individuality, as a change agent and as a member of society and hence it describes teachers' development in three ways. Not just the professional development but also to influence his own living conditions, to aid in group decisions and to influence others living conditions wherever required. The ECE model is more of the professional oriented and describes the teacher competence field in

four domains, as to what they understand, what they are able to, the ways in working with others and what they should learn to be. (Bertschy et al., 2013)

Wiek, A.; Withycombe, L.; Redman, C. & Mills, S.B. (2011) talked about the importance of actual solution and reduction of sustainability problems more than just disseminating the research works. They discussed about having a more clear description of Sustainability Competencies that are imbibed in sustainability graduates.(Wiek et al., 2011)

Svanstrom,M.; Lozano-Garcia,F.J. and Rowe,D. (2008) studied the Tbilisi and Barcelona declarations to establish the similarities in the result of a course for education for sustainable development. The various similarities found in the study were systematic or holistic thinking, integration of different perspectives, critical thinking, change agent abilities and communication, various attitudes and values.(Svanström et al., 2008)

3. DESCRIPTION OF BROAD AREA

3.1 Rationale Of The Study

It seems clear that educational institutions especially the higher education institutes have significant participation in education for sustainability. The part of education portrayed in formation of just, equitable and sustainable societies are increasingly recognized by national and international organizations. With the increasing importance of promoting sustainable development goals and the need for it to be imbibed in education, many researches and efforts have been taken to integrate it in the curriculum at school level and also for training teachers teaching at the school level. The growth and development of a society largely depends on its

economic development. The economy largely influences society and environment directly and indirectly through its working.

Nurturing human beings with the correct sort of capabilities needed towards harmony, growth and sustainability is the action essentially required for the country's economic development. Reformative adjustments towards financial advancement of the nation by imbibing required capabilities among the future business pioneers towards a sustainable financial system can be brought about through business education(KAR & LILLIAN, 2018). Business studies investigate the association of financial thriving, cultural prosperity and the climate and urges students to think and go about as capable and moral residents. The science education has direct connection with the dealings of environment. Science is the source from where environment has come to the focal of society.

Competence based learning assumes an incorporating job. It consolidates knowledge, skill and attitude and consequently affects the conduct crucially with regard to sustainability(Valderrama-Hernández et al., 2020). An overall pattern, notwithstanding, is a move away from tolerating the educational examples of the past and closer to innovation in search of making meaningful contribution to a sustainable society(Storey et al., 2019). This prompts a change in outlook in the field of education. Just as bestowing information and aptitude educators have to put together students to make aware residents of sustainability, responsibility and morals inside whatever field they take upon graduation.

The present study aims to focus the students at graduation level and tries to develop a framework to imbibe and inculcate Sustainability Competences in the future economy generalist, policy makers, environment specialists, scientists, architectures, etc. or just citizens.

3.2 STATEMENT OF THE STUDY

Development and Evaluation of Sustainability Competencies Toolkit

3.3 DEFINITION OF TERMS

Sustainability Competencies

Sustainability Competencies are defined by Arizona State University as “complexes of knowledge, skills and attitudes that enable successful task performance and problem solving related to real-world sustainability problems, challenges and opportunities”. There are different views for defining the core competencies for sustainability by many intellectuals and authors. However UNESCO has focused upon eight core competencies for sustainability issues.

- System Thinking Competency: system thinking is the ability to look at things or situations in a systematic and holistic manner. It is the ability to look whole of the parts and the parts of whole. It is about establishing relationship and to address uncertainty.

- Anticipatory Competency: it is the ability to look into the future, to see what it can be, to see what you want it to be. It is the ability to imagine multiple possibilities, to survey the result of activities and to manage dangers and changes.

- Normative Competency: it is the ability to understand and mirror your act on the basis of norms and values. It is to analyse the outcome of an act with regards to community norms and to take actions accordingly. It is to take wise action at the time of conflicts and conciliate sustainability standards, esteems, objectives and focusses.

- Strategic Competency: it is the ability to get things done. It’s all about taking action about a solution which leads to effective change. A sustainability problem cannot be solved if you are unable to get things done or act on your plans.

- Collaboration Competency: It is the ability to work with a team. It is about stakeholder engagement, the ability to learn from others, to understand other people’s views, necessities and actions. To work with empathy, deal with conflicts and work in participation.

- Critical Thinking Competency: It is the ability to distinguish the good or bad action of our own as well as of others and also of the information acquired through various sources and to act appropriately for the sustainability path.

- Self-awareness Competency: It is the ability to know and understand your own self, to know one's own limitations, potentials, sentiments and prejudices in different situations and how do we express our interests, skills, abilities and values in the sustainable course.

- Integrated Problem-solving Competency: This ability is the ability to integrate all other competences and arriving at a fruitful solution. It is the ability to solve complex problems with meaningful solutions. It includes inquiring, synthesizing, interpreting and critically analysing of information to make informed decisions.

Operational Definition: For present study a set of six core competences focussed by UNESCO will be undertaken. These are:

- Systems thinking competency
- Anticipatory competency
- Normative competency
- Strategic competency
- Collaboration competency
- Integrated problem-solving competency

<u>Sustainability Competencies Toolkit</u>

Oxford Learner's Dictionary defines a toolkit as a set of things that you need in order to achieve something.

In Education, Sustainability Competencies Toolkit is an assortment of devices, directions and assets for planning future classroom situations and utilizing them to bring progressive and imaginative teaching-learning to classroom that advances sustainability

competencies in the learners. It helps the user to set up a way through the cycle of advancement.

Operational Definition: For the present study Sustainability Competencies Toolkit will refer to a series of activities prepared by researcher.

4. AIMS OF THE STUDY

1. To study Sustainability Competencies among graduate students.
2. To design and develop a toolkit to enhance sustainability competencies for the graduate students.
3. To study the effectiveness of Sustainability Competencies Toolkit.

OBJECTIVES OF THE STUDY

1. To develop questionnaire for measuring Sustainability Competencies.
2. To study the level of Sustainability Competencies of graduate students with respect to:
    a. Systems thinking competency
    b. Anticipatory competency
    c. Normative competency
    d. Strategic competency
    e. Collaboration competency
    f. Integrated problem-solving competency
3. To design and develop a tool kit to enhance Sustainability Competencies for the graduate students.
4. To compare the pre-test scores of Sustainability Competencies of control group and experimental group of graduate students.
5. To compare the pre-test and post –test scores of Sustainability Competencies of control group of graduate students.

6. To compare the pre-test and post-test scores of Sustainability Competencies of experimental group of graduate students.
7. To compare the post-test scores of Sustainability Competencies of control group and experimental group of graduate students.

HYPOTHESES OF THE STUDY

1. There is no significant difference in the pre-test scores of Sustainability Competencies of control group and experimental group of graduate students.

2. There is no significant difference in the pre-test and post-test scores of Sustainability Competencies of control group of graduate students.

3. There is no significant difference in the pre-test and post-test scores of Sustainability Competencies of experimental group of graduate students.

4. There is no significant difference in the post-test scores of Sustainability Competencies of control group and experimental group of graduate students.

5. METHODOLOGY OF THE STUDY

For this study, Quantitative research approach will be used. Under that Survey method and Experimental method will be used. Experimental research will be used to find the effectiveness of Sustainability Competencies Toolkit.

POPULATION, SAMPLE AND SAMPLING TECHNIQUES

Population: Students enrolled for graduation will be population of this study.

Sample: 300 students enrolled for graduation in Faridabad region will be sample of this study for Survey and 80 students will be sample for studying effectiveness of Sustainability Competencies Toolkit.

5 educators will be experts for this study.

Sampling Technique: Stratified sampling technique will be used to select students for survey. For Experimental study convenience sampling will be used for the selection of college(s).

TOOLS OF RESEARCH

Rating scale and opinionnaire for experts will be prepared by the researcher.

The researcher will prepare Sustainability Competencies inventory to study the level of Sustainability Competencies achieved by students enrolled for graduation.

The researcher will also develop Sustainability Competencies Toolkit.

ANALYSIS OF DATA

The following statistical techniques will be used for quantitative analysis:

Descriptive analysis: Mean, Median, Mode, SD, Skewness and Kurtosis, Percentage.

Inferential analysis: t-test

SCOPE AND DELIMITATION OF THE STUDY

The study is delimited to graduation students.

The study will be delimited to the analysis of only six key Sustainability Competencies that are recognized by UNESCO.

6. EXPECTED OUTCOME OF THE RESEARCH

The research expects to develop a toolkit which could enhance the Sustainability Competences in the students enrolled for graduation and can be used as a framework by the teachers who are teaching them.

SIGNIFICANCE OF THE STUDY

This study will provide a solid framework to promote Sustainability Competencies in curriculum. This study will be helpful to curriculum developers to modify the existing curriculum according to local, national and global perspective. This will also be a useful guide to the teachers teaching at graduate level to include the Sustainable Competencies in their teachings to prepare students for sustainable future. This study will be helpful for students of graduation to develop the Sustainability Competencies in their behaviour and implement it in their lifestyle. Policy makers can avail usable inputs from this research.

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DEVELOPMENT AND EVALUATION OF SUSTAINABILITY COMPETENCIES TOOLKIT

SHORT SYNOPSIS

By

JamilaAnsari

Reg. No.: 2K20-PFEd-001

Under the supervision of

Dr.Geeta R. Thakur

ABSTRACT

The Agenda21 has given a major focus on the quality education to all in its SDG4 and highlighted the key function of education to prepare future generation youth for a sustainable society. The Sustainability Competences are major focus in this respect. The present study is undertaken with the objective to prepare a toolkit which would help in embedding the Sustainability Competences in the students enrolled for graduation. The education for sustainable development requires the future youth to take informed and timely action and acquire a lifestyle that lead to the prosperity of the planet. Higher Studies programs need to be enriched with experiences leading to the acquisition of skills and competences desired for taking sustainable decisions while going for economic policies, manufacturing activities, project management, architectural design etc. The study intends to take 300 samples for survey and 80 samples for the evaluation of toolkit.

Key words: Sustainable Development Goals, Education for Sustainable Development, Sustainability Competencies, Higher Studies, Toolkit.

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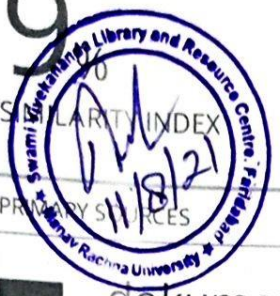

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